Accessing the iPod Library

Session 317

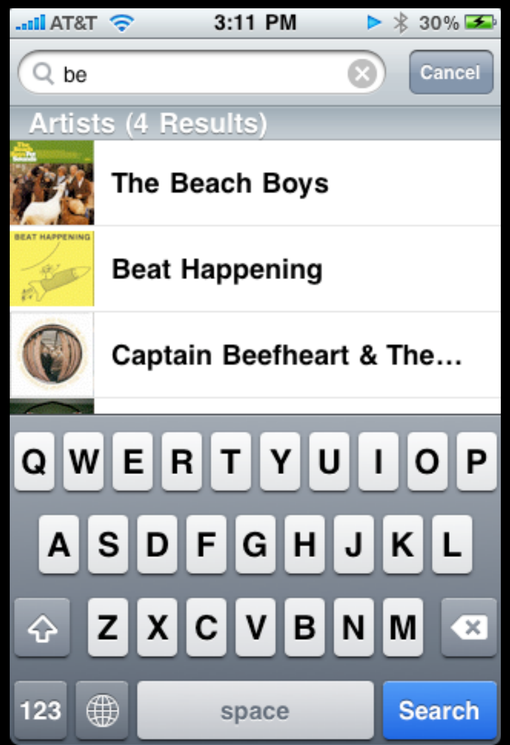
These are confidential sessions—please refrain from streaming, blogging, or taking pictures.

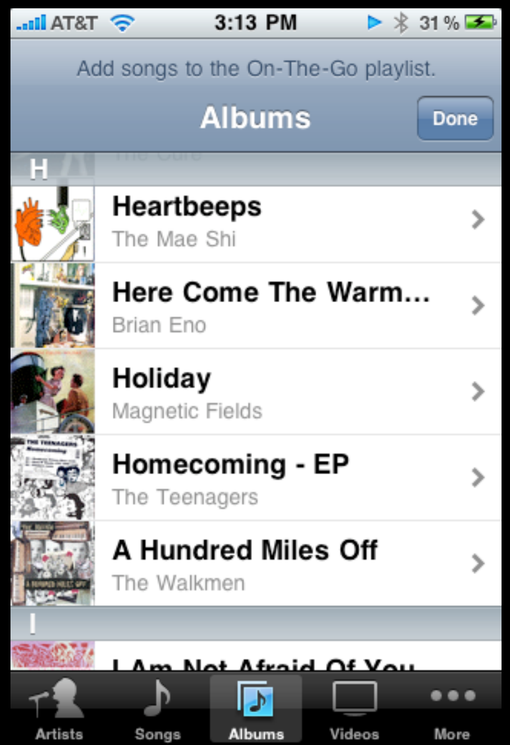
Accessing the iPod Library

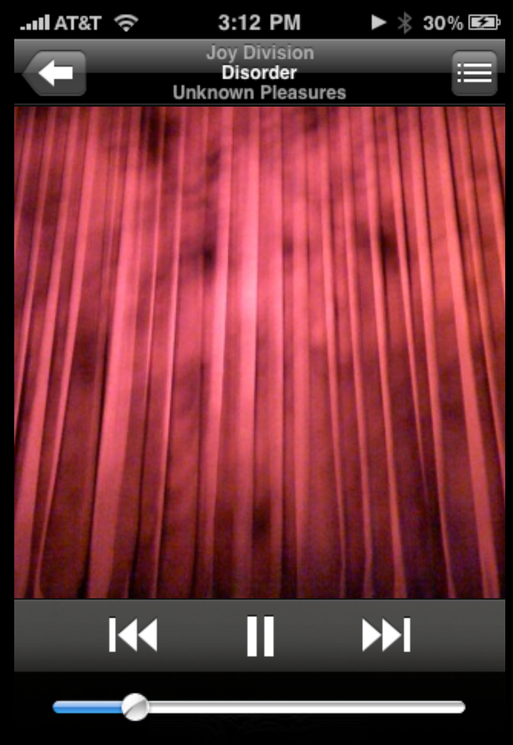
Lucas Newman
iPhone Software Engineer

Introduction

- Provide the functionality of the iPod to your application







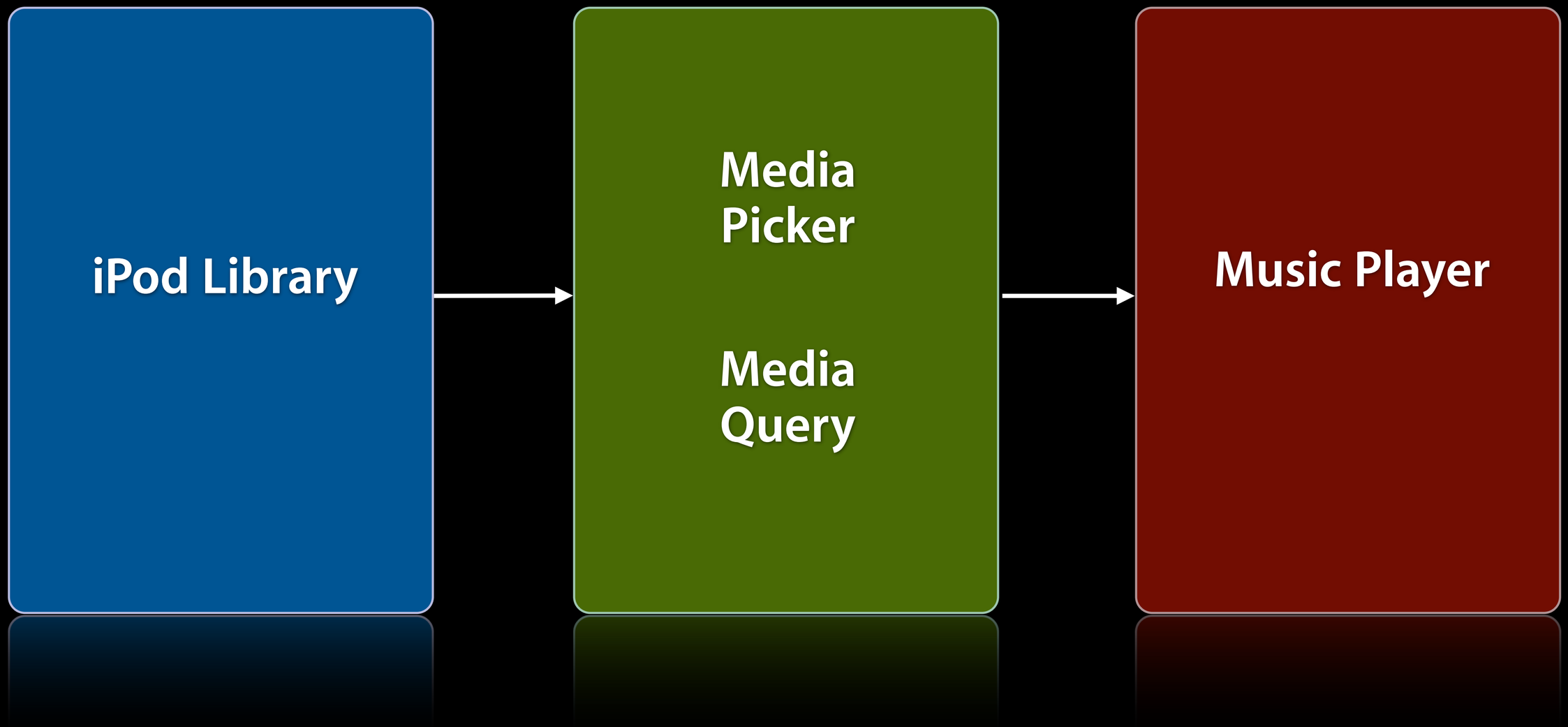
What You'll Learn

- Use the prebuilt UI for picking media
- Search the iPod library for media
- Play audio from the iPod library
  - Music
  - Audio podcasts
  - Audio books

What You Won't Learn :-)

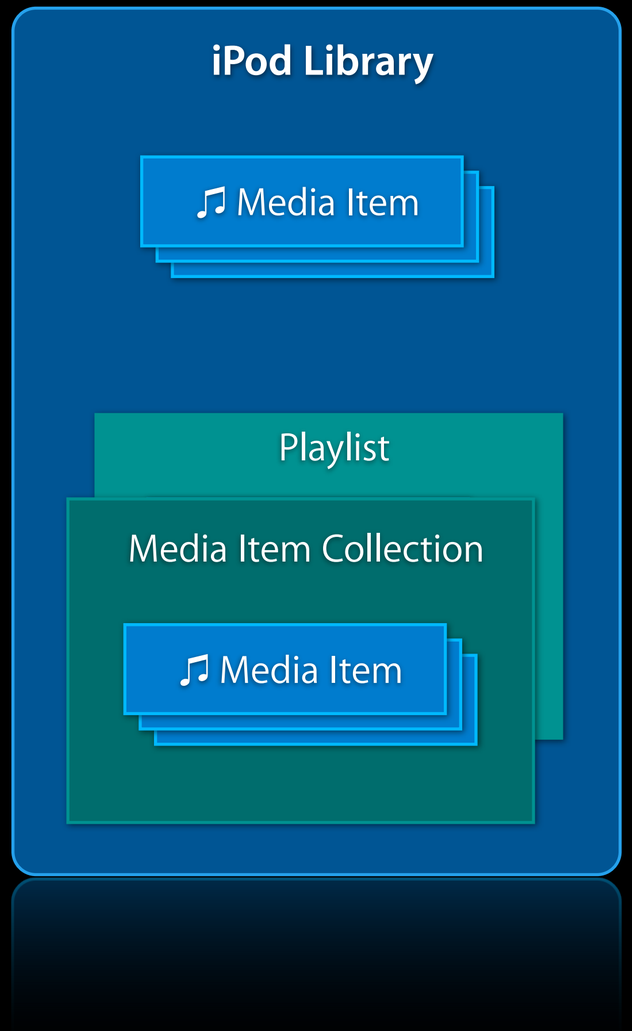
- Modify the iPod library
- Access raw audio data
- Provide feedback on what matters most to you
  - bugreport.apple.com

Media Player Overview



What's in the iPod Library?

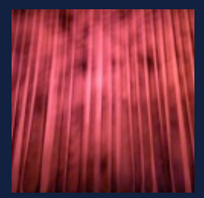
What's in the iPod Library?



MPMediaItem

A single song, podcast, or audio book

♫ Media Item

Media Type	Music
Title	Hanging Around
Artist	The Venetian Blinds
Album	Open Up
Artwork	

…more…

MPMediaItem

- Fetch metadata using predefined string constants

```
- (id)valueForProperty:(NSString *)property;
```

- All constants have a common prefix

```
MPMediaItemPropertyPersistentID
MPMediaItemPropertyMediaType
MPMediaItemPropertyTitle
MPMediaItemPropertyArtist
                                    ...
MPMediaItemPropertyAlbumTitle
MPMediaItemPropertyArtwork
MPMediaItemPropertyLyrics
MPMediaItemPropertyGenre
```

MPMediaItem

Example

```
MPMediaItem *mediaItem = ...

NSString *title =
  [mediaItem valueForProperty:MPMediaItemPropertyTitle];
```

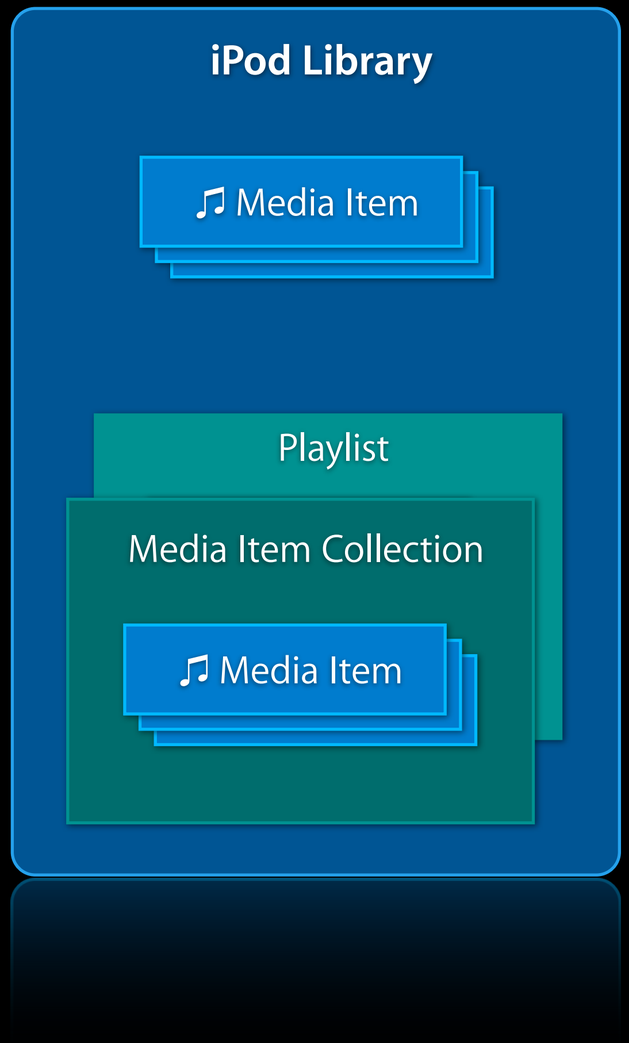
MPMediaItem

Artwork is special

- Artwork property is instance of MPMediaItemArtwork

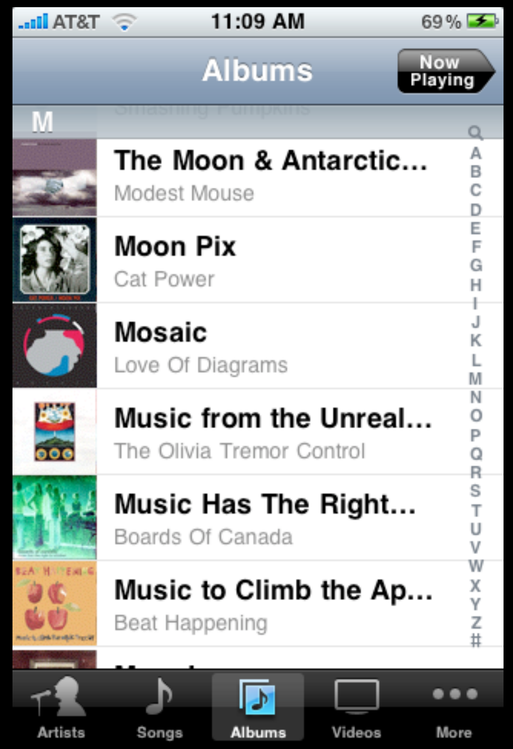
```
MPMediaItemArtwork *artwork =
 [mediaItem valueForProperty:MPMediaItemPropertyArtwork];

UIImage *image = [artwork imageWithSize:CGSizeMake(50, 50)];
```

- PROTIP: Certain sizes are more efficient to access
  - Use the size you will display on screen!


iPod Library
♫ Media Item
Playlist
Media Item Collection
♫ Media Item

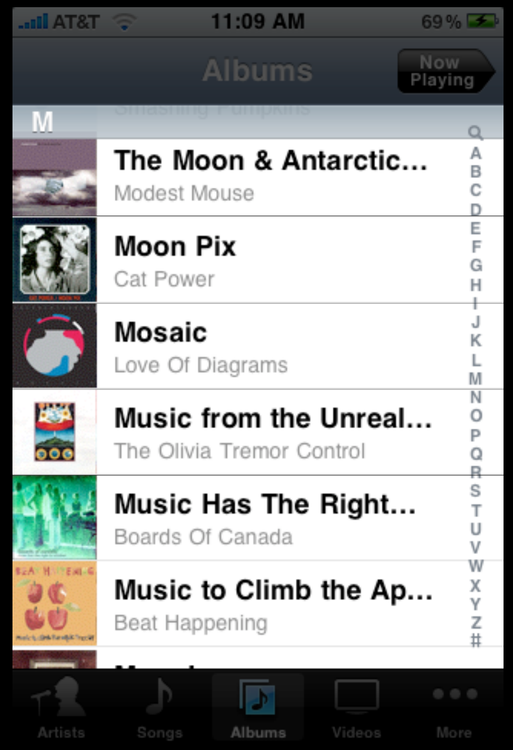
MPMediaItemCollection

A collection of related media items



MPMediaItemCollection

A collection of related media items



MPMediaItemCollection

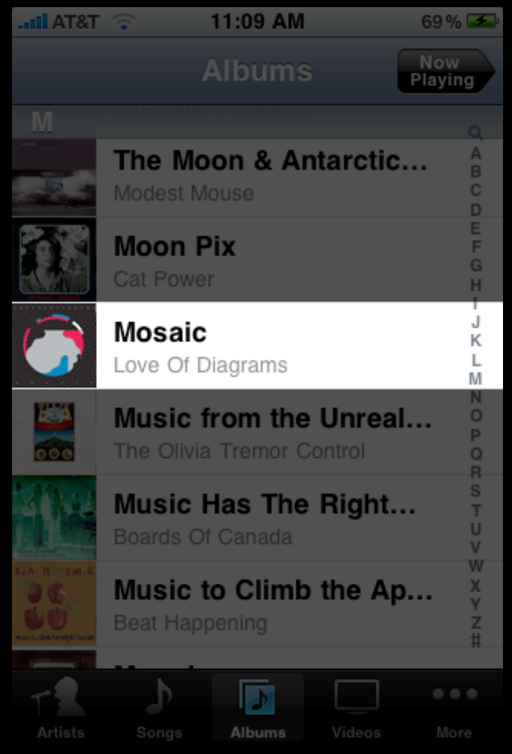
- Contains “iTunes ordered” items

```
MPMediaItemCollection *collection = ...

NSArray *items = [collection items];
```

- Efficient accessors for
  - Number of items
  - Media types of items

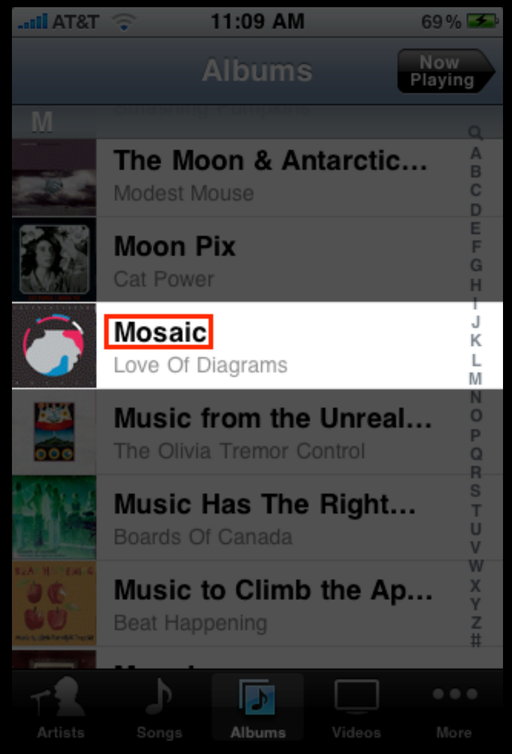
MPMediaItemCollection

- Has a “representative item”



MPMediaItemCollection

- Has a “representative item”
- Use for common properties in UI



MPMediaItemCollection

- Has a “representative item”
- Use for common properties in UI

```
MPMediaItemCollection *collection = ...

MPMediaItem *item = [collection representativeItem];

NSString *collectionArtist =
 [item valueForProperty:MPMediaItemPropertyArtist];
```

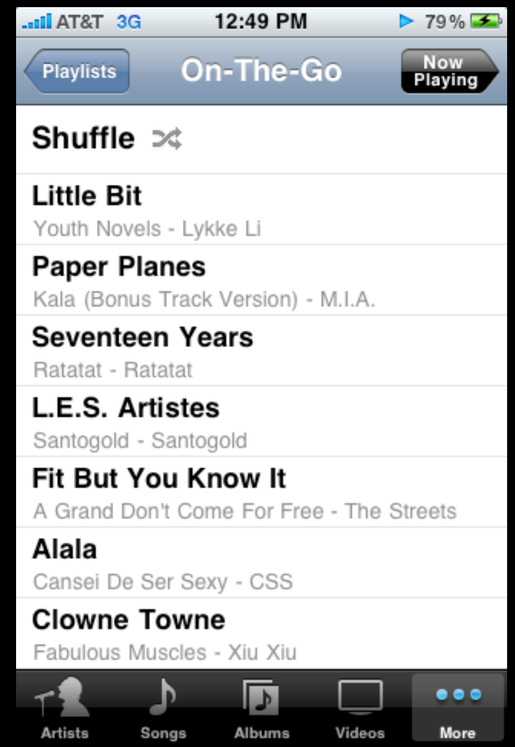
- PROTIP: Make sure property is applicable to collection

MPMediaPlaylist

A user-created collection of media items

- Subclass of MPMediaItemCollection
- Contains additional metadata

```
MPMediaPlaylistPropertyPersistentID
MPMediaPlaylistPropertyName
MPMediaPlaylistPropertyPlaylistAttributes
```

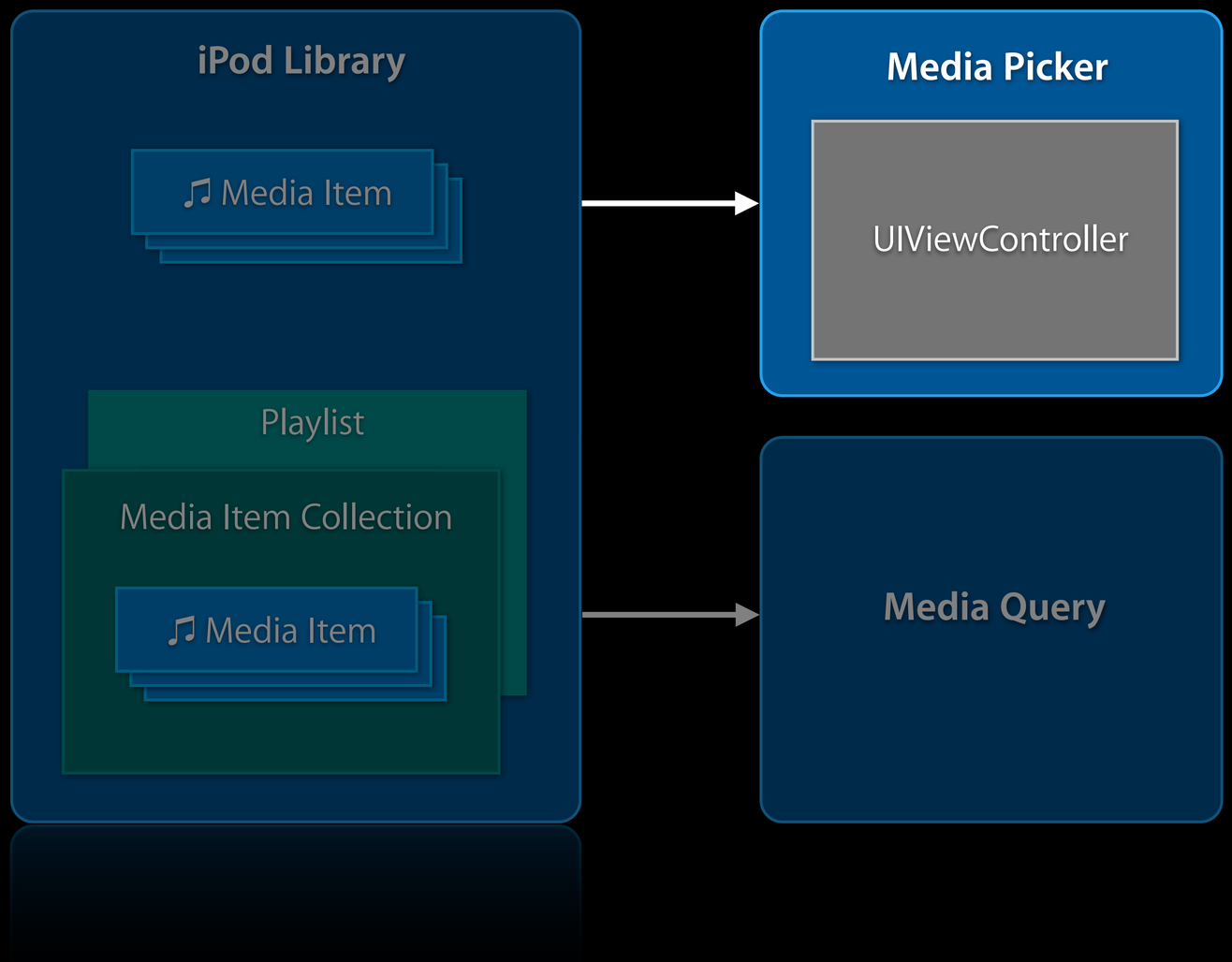


Persistence

- All MPMediaItem* classes conform to NSCoding protocol

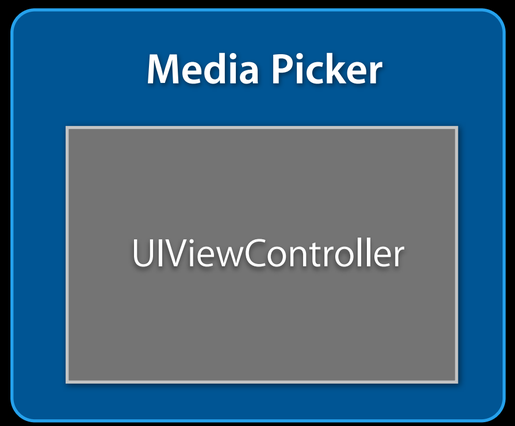
```
MPMediaItem *item = ...

NSData *archivedItem =
  [NSKeyedArchiver archivedDataWithRootObject:item];

// can now store archivedItem in prefs, etc.
```

- Media items and playlists also have a persistent ID


iPod Library
Media Item
Playlist
Media Item Collection
Media Item
Media Picker
UIViewController
Media Query

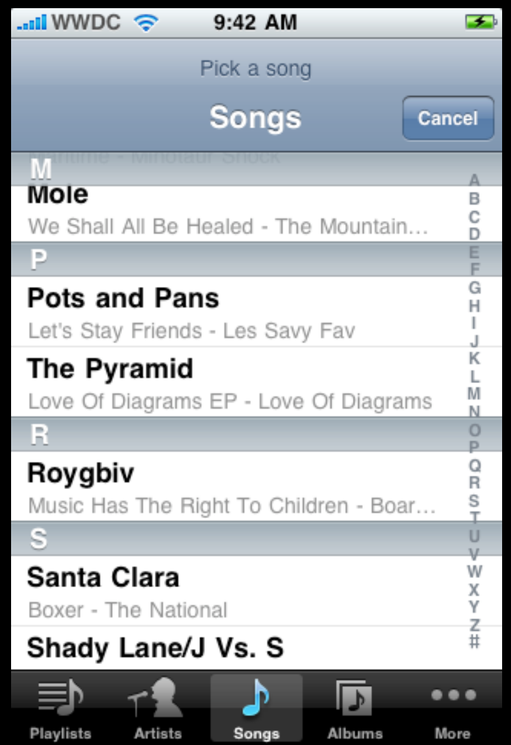
MPMediaPickerController

UIViewController for picking media items

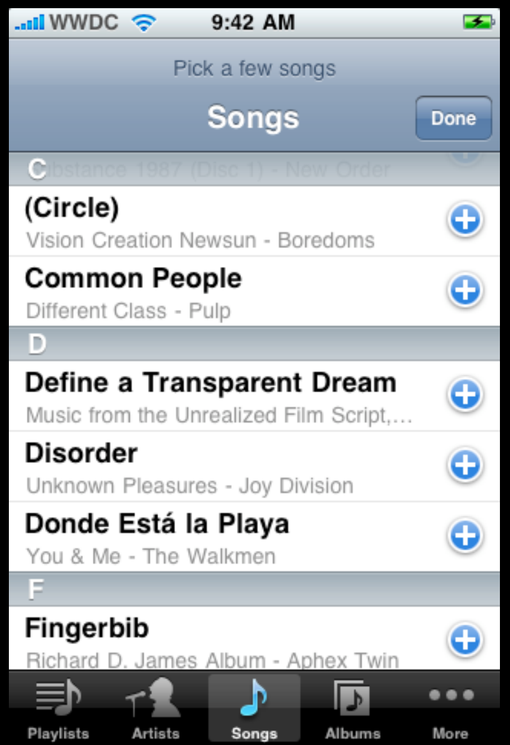


MPMediaPickerController

UIViewController for picking media items



Single Item



Multiple Items

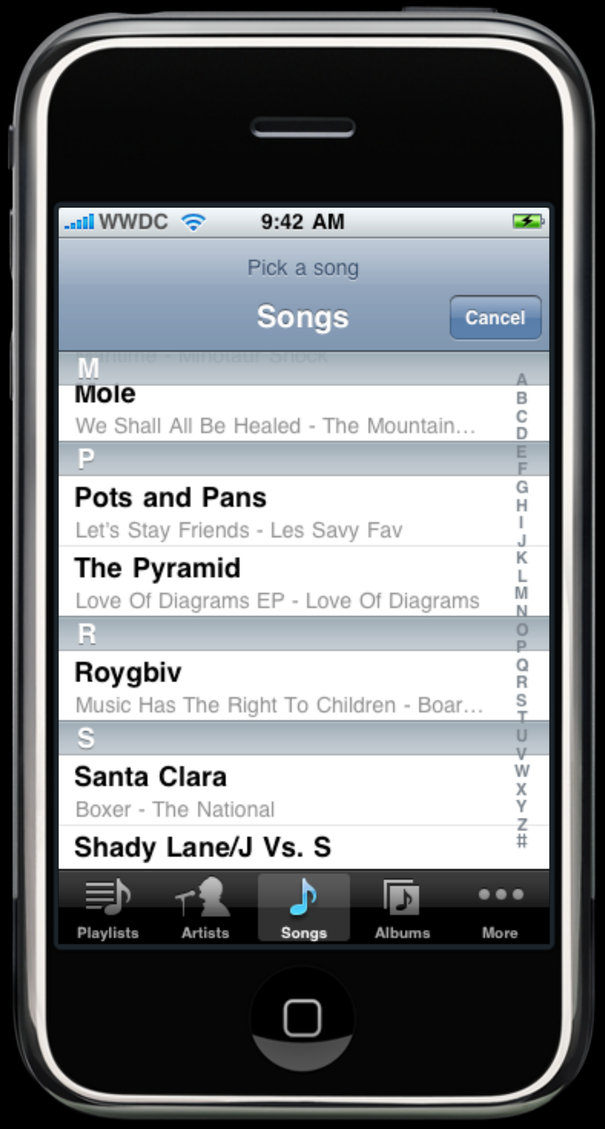
MPMediaPickerController

Showing a media picker

```
MPMediaPickerController *picker =
 [[MPMediaPickerController alloc] init];

[picker setDelegate:self];

[viewController presentModalViewController:picker animated:YES];
```

MPMediaPickerController

Showing a media picker



MPMediaPickerController

Delegate methods

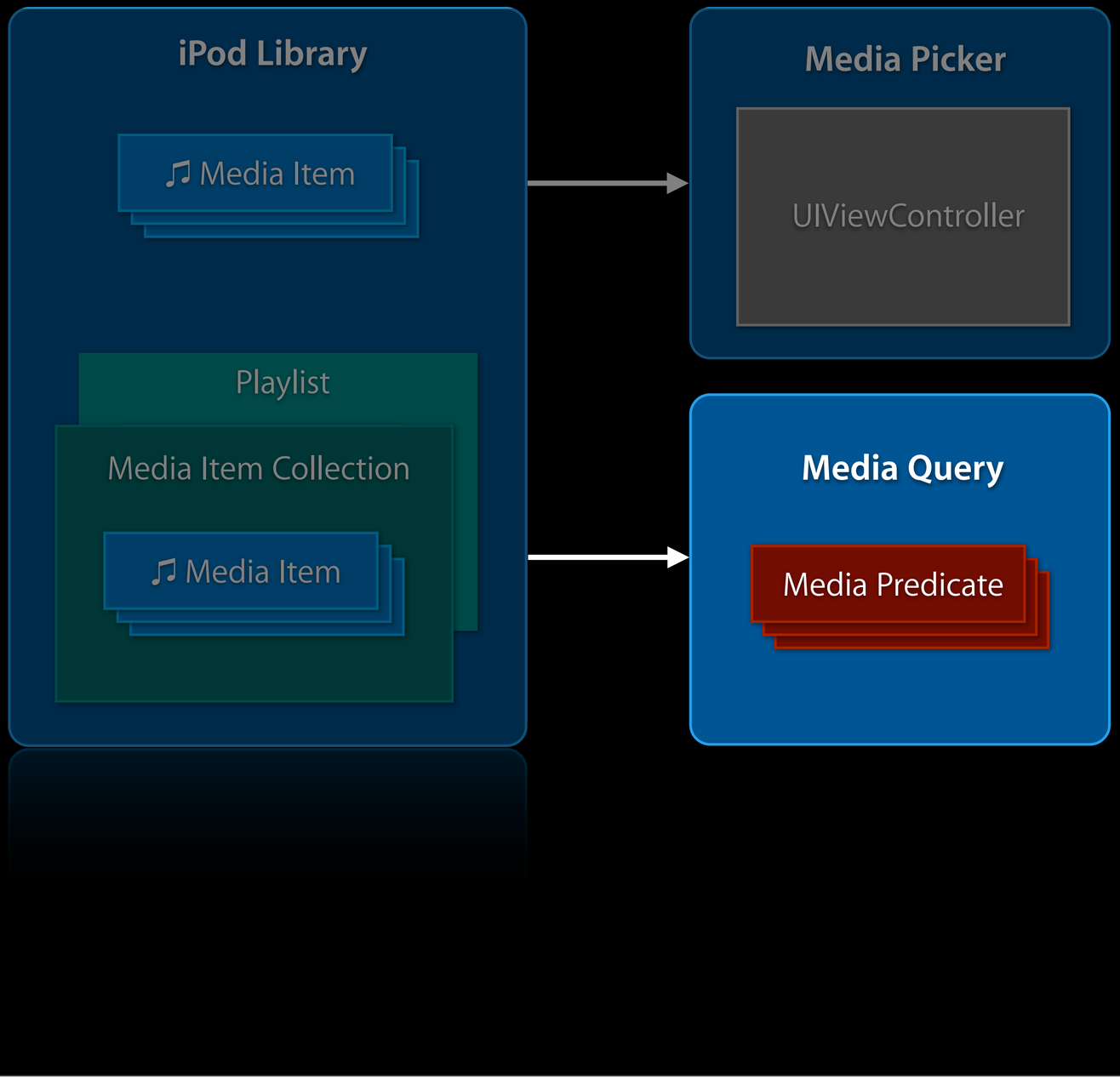
```
- (void)mediaPicker:(MPMediaPickerController *)picker
      didPickMediaItems:(MPMediaItemCollection *)collection;

- (void)mediaPickerDidCancel:(MPMediaPickerController *)picker;
```

- Always returns an item collection

```
// get the item from a single item picker
MPMediaItem *item = [[collection items] lastObject];
```

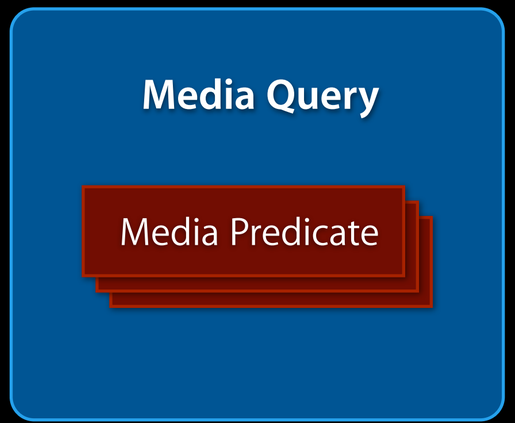
Demo

Henry Mason
iPhone Software Engineer


iPod Library
Media Item
Playlist
Media Item Collection
Media Item
Media Picker
UIViewController
Media Query
Media Predicate

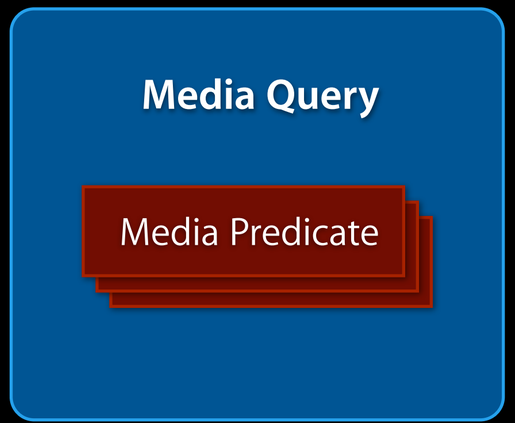
MPMediaQuery

Search for items and collections



MPMediaQuery

Search for items and collections



MPMediaQuery

Creating queries

- Start with a provided query

```
MPMediaQuery *songsQuery = [MPMediaQuery songsQuery];
```

- Create a new query

```
MPMediaQuery *query = [[MPMediaQuery alloc] init];
```

MPMediaQuery

Example

- Determine matching items

```
NSArray *items = [query items];
```

- Or collections

```
[query setGroupingType:MPMediaGroupingArtist];

NSArray *collections = [query collections];
```

MPMediaPredicate

Refine a query

- Base class is abstract

- Currently one concrete subclass: MPMediaPropertyPredicate

```
MPMediaPropertyPredicate *predicate =
 [MPMediaPropertyPredicate predicateWithValue:@”The Beets”
                                  forProperty:MPMediaItemPropertyArtist];

[query addFilterPredicate:predicate];

[query items]; // all items with artist “The Beets”
```

MPMediaPropertyPredicate

Filtering by property

- Not all properties can be used to construct predicates

- Check headers/documentation

- Check at runtime

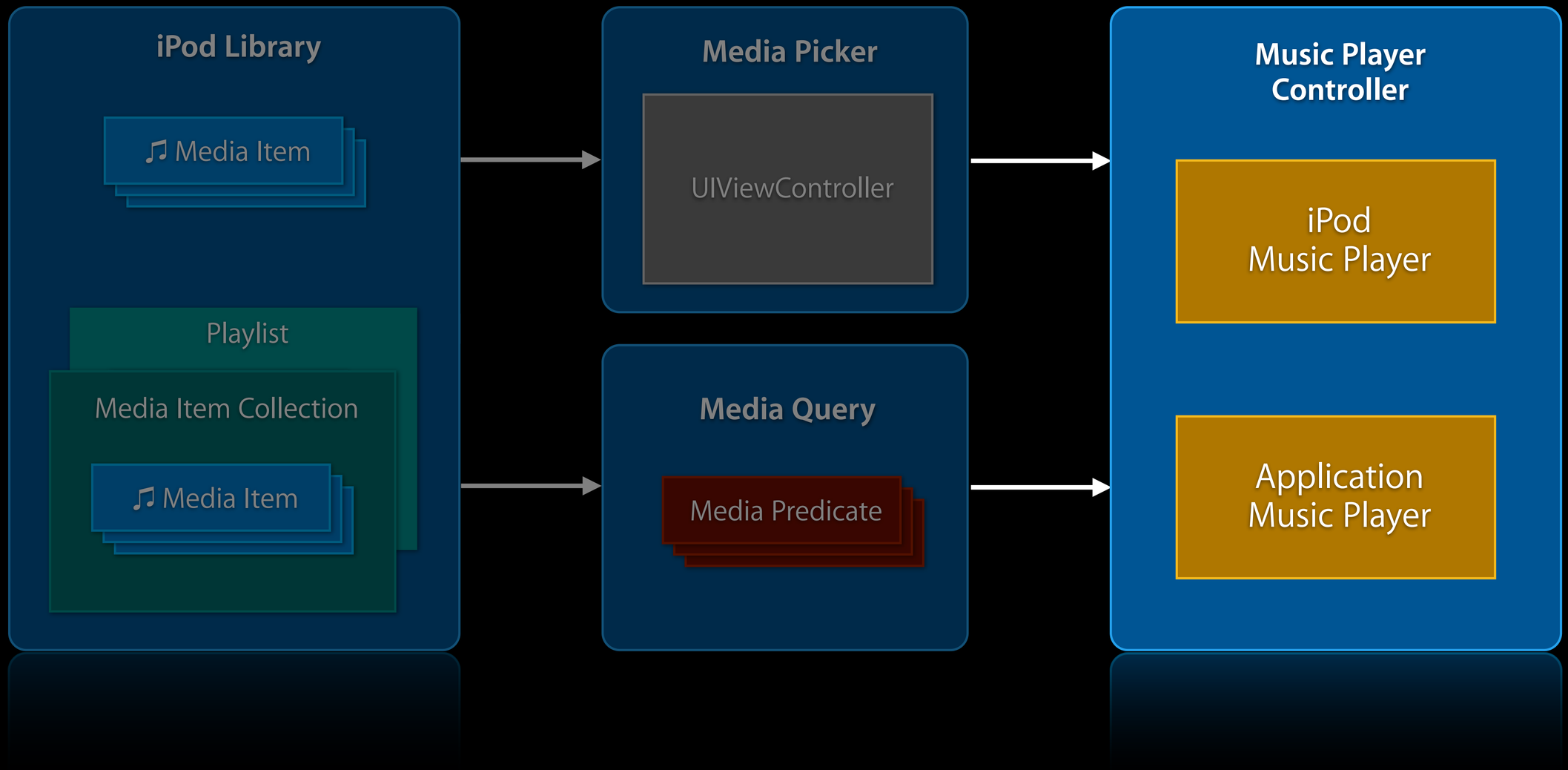
```
+ (BOOL)canFilterByProperty:(NSString *)property;
```

MPMediaPropertyPredicate

Caveats

- All predicates combined using AND operator
- One predicate for any given property
  - Otherwise behavior is undefined

Demo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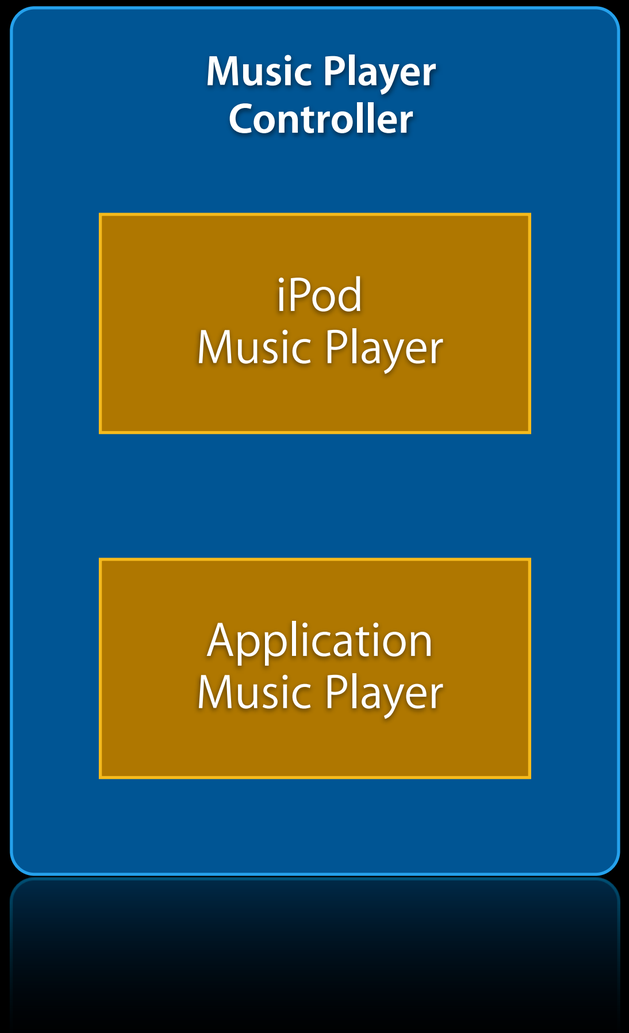
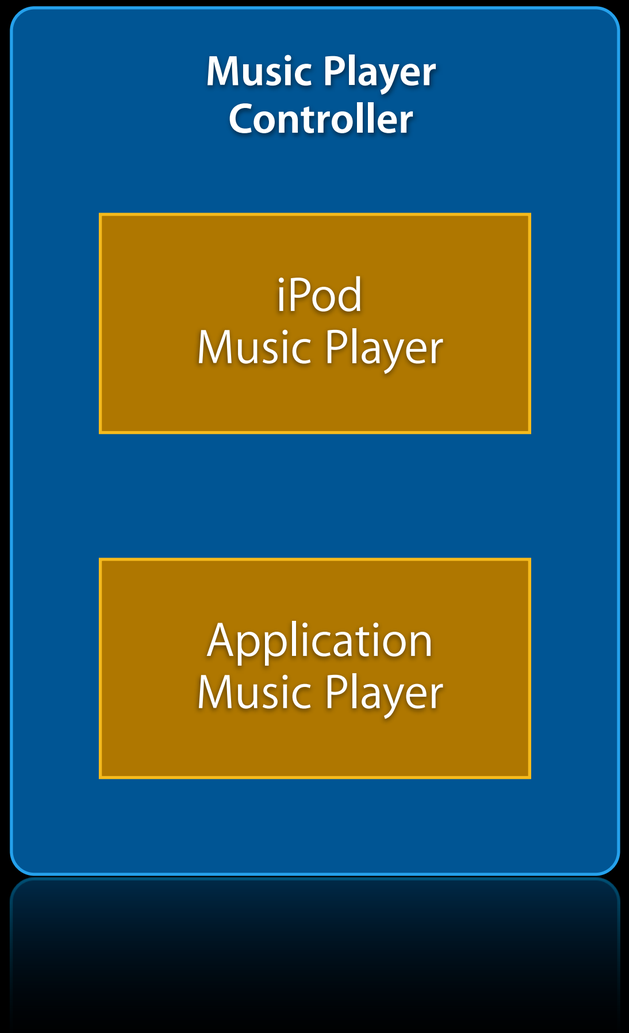
Music Player Controller
iPod Music Player
Application Music Player

MPMusicPlayerController



MPMusicPlayerController

Two flavors



MPMusicPlayerController

Playing music

- Set up a queue of items

```
- (void)setQueueWithQuery:(MPMediaQuery *)query;

- (void)setQueueWithItemCollection:(MPMediaItemCollection *)col;
```

- Start playback

```
- (void)play;

- (void)pause;
```

MPMusicPlayerController

Example

```
MPMusicPlayerController *musicPlayer =
 [MPMusicPlayerController iPodMusicPlayer];

[musicPlayer setQueueWithQuery:[MPMediaQuery songsQuery]];

[musicPlayer play];
```

MPMusicPlayerController

Controlling playback

- Adjusting the playback time

```
@property(nonatomic) NSTimeInterval currentPlaybackTime;

- (void)beginSeekingForward;
- (void)endSeekingForward;
```

- Moving through items in the queue

```
- (void)skipToNextItem;
- (void)skipToBeginning;
- (void)skipToPreviousItem;
```

MPMusicPlayerController

Is it playing?

- Ask the music player directly

```
@property(nonatomic) MPMusicPlaybackState playbackState;
```

- Watch for changes

```
[[NSNotificationCenter defaultCenter]
 addObserver:self
 selector:@selector(playbackStateChanged:)
 name:MPMusicPlayerControllerPlaybackStateDidChange
 object:musicPlayer];

[musicPlayer beginGeneratingPlaybackNotifications];
```

MPMusicPlayerController

What's playing?

- Ask the music player directly

```
@property(nonatomic, copy) MPMediaItem *nowPlayingItem;
```

- Watch for changes

```
[[NSNotificationCenter defaultCenter]
 addObserver:self
 selector:@selector(nowPlayingItemChanged:)
 name:MPMusicPlayerControllerNowPlayingItemDidChange
 object:musicPlayer];

[musicPlayer beginGeneratingPlaybackNotifications];
```

Demo

Audio Mixing

- Set up an audio session

```
AVAudioSession *session = [AVAudioSession sharedInstance];

[session setCategory:AVAudioSessionCategoryAmbient error:&error];

[session setActive:YES error:&error];
```

- Play audio as usual

```
AVAudioPlayer *player = [[AVAudioPlayer alloc] initWith...];

[player play];
```

Audio Mixing and Routing

- Audio route changes

```
// It just works!
```

- Music plays regardless of ringer switch (just like iPod)
- PROTIP: Beware of software decoding when mixing!

Audio Mixing and Routing

More information and examples

- "AddMusic" sample on the session page

  http://developer.apple.com/wwdc/attendee/sessions/317/session.php?id=317

- Session videos (after the conference)

Audio Development for iPhone OS	Presidio Tuesday 3:30PM

Labs

iPod Library Access Lab	iPhone Lab D Friday 9:00AM

Q&A

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